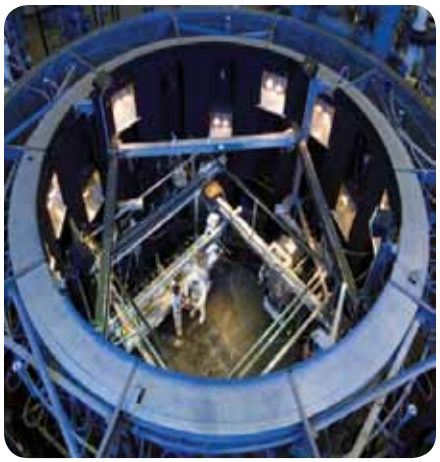
National Aeronautics and Space Administration

NASA's Strategic Capabilities Assets Program

NASA JOHNSON SPACE CENTER
THERMAL VACUUM CHAMBER B



Thermal Vacuum Chamber B, with roughly one-tenth of the internal volume of Chamber A, can handle a variety of smaller-scale tests more economically and with faster response. It is a human-rated chamber equipped with a traversing monorail that provides weight relief to a suited crewmember while allowing two degrees of freedom inside the chamber with 200 square feet (18.6 square meters) of working space.

Major structural elements of the chamber are the removable top head, the fixed chamber floor, dual crewlocks at the floor level, and a load-bearing floor area of 20 feet (6.1 meters) in diameter that will support a concentric load of 75,000 pounds (34,000 kilograms). The dual crewlocks provide easy access to the test articles and function as a means of transporting crewmembers back and forth to the test environment during tests. The crewlocks can also be used as an altitude chamber for independent tests. One crewlock is equipped with a water deluge system and other features that permit its use for crew operations with oxygen-rich residual atmospheres.

SPECIFICATIONS

Outside dimension	35 feet (10.7 meters) in diameter x 43 feet (13.1 meters) high
Working dimensions	25 feet (7.6 meters) in diameter x 26 feet (7.9 meters) high
Test article weight	75,000 pounds (34,000 kilograms) concentric load maximum
Access	35 feet (10.7 meters) in diameter removable top head Dual crewlocks with doors at floor level Locks measure 8 feet x 11 feet x 12.8 feet (2.4 meters x 3.4 meters x 3.9 meters)
Types of pumps	Staged roughing pumps, valved cryo absorption pumps, valved turbomolecular pumps, 20 K (-424 ºF) cryopump panels
Environment	90 K liquid nitrogen heat sink shrouds at 1 x 10^{-6} Torr, 130,000 W total heat absorption capacity, 150 W/ft^2 (1,615 W/m^2) maximum heat flux
Pumpdown time	5 hours to test conditions
Pumping capacity	1 x 10^{-7} liters/second condensibles and 2 x 10^5 liters/second noncondensibles at 1 x 10^{-6} Torr pressure
Top Sun simulator	One to 37 xexon lamp modules producing a 20-foot (6.1-meter) diameter beam maximum Modules can be located anywhere within a 20-foot (6.1-meter) circle 90-minute half angle decollimation; intensity of 58 to 126 W/ft^2 (622 to 1,353 W/m^2) ±5 percent uniformity
Man-rated capability	Water deluge system for fire protection of suited operations at high oxygen concentrations for crewlock only Emergency repress capability to site pressure within 90 seconds Crew ingress and weight relief systems to offload the weight of the extravehicular activity (EVA) suit and portable life-support system from the crewmember

CONTACT INFORMATION

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